occrus pusillus not common in any other locality visited by me was frequently seen, and *Haltica rufa* was so abundant about the roots of grass as to be a nuisance. An unknown *Acalles* was hailed with delight when the first specimen appeared, but it soon grew rather common and proved to be *ventrosus*. Another weevil was abundant, its brassy hue shining in the sun as I stirred it up from the soil, *Tylodcrma aereum*. Two or three species of *Tachys*, many small Staphylinids and scores of *Limnichus nitidulus* were taken thus. Several specimens of a carabid new to me with odd deeply pitted elytra proved to be *Selenophorus fossulatus* and I took three specimens of *Hydrochus rugosus* which I had never found before. Sometimes a pupa was found in the soil, or the whitish grub of some scarabid beetle. So my search was not a monotonous one but full of interest and excitement and I shall never regret the long hours I spent so near the earth itself in my hunt for *Saldoida*.

A new Dragonfly (Odonata) belonging to the Cordulinae, and a Revision of the Classification of the Subfamily.

By E. B. Williamson.

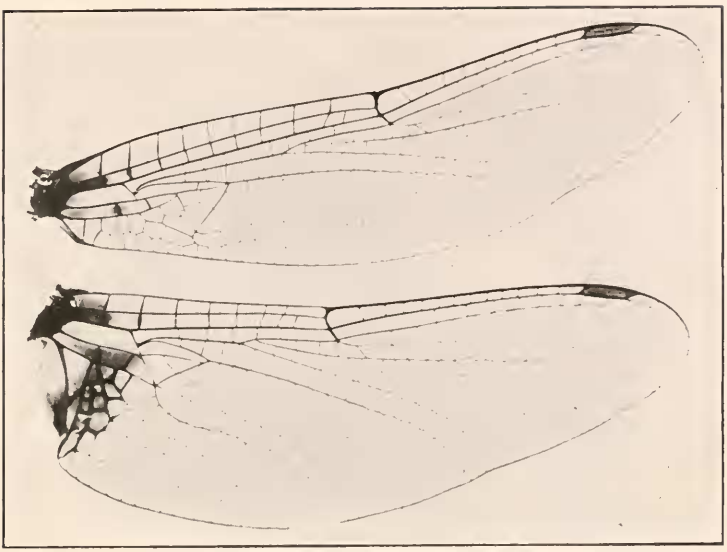
(Plate XVIII.)

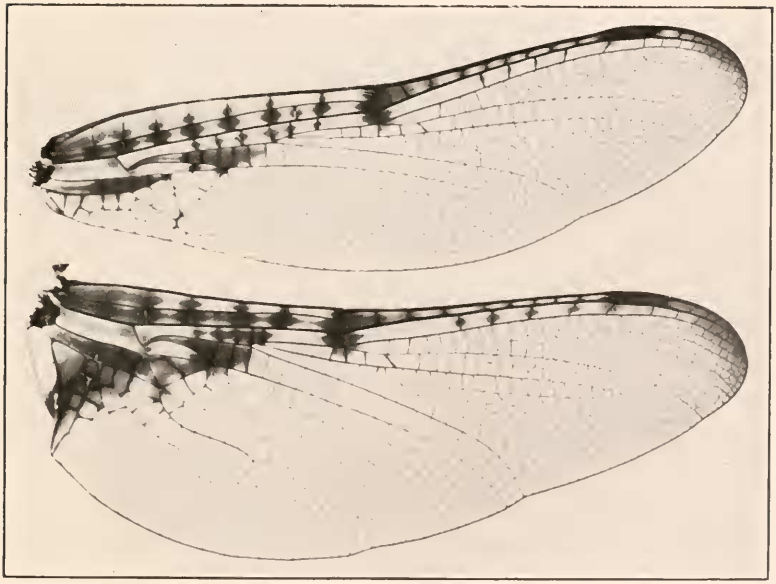
In the past, two groups of Cordulinae have been recognized and defined by the following characters: crossed or free supertriangles, and united (stalked) or distinct (separate) sectors of the arculus. These groups and the sub-groups are familiar to students of Odonata and need not be discussed here, except to call attention to the fact that the classification resulting from the use of these characters has been an altogether artificial one, resulting in an unnatural assemblage of genera.

The sub-family Synthemiinae, proposed by Needham and Hart* but not defined, by inference includes the second legion or group defined by de Selys and later authors, but only the Illinois genera of this legion are mentioned. Later Needham†

* Bull. Ill. St. Lab. Nat. Hist. Vol. VI, Sept., 1901, p. 5.

† Aquatic Insects in the Adirondacks, N. Y. St. Mus. Bull. 47, Sept., 1901, p. 479.





WILLIAMSON ON ODONATA.

Above, *Neurocordulia yamaskanensis* ♂. Ottawa, Canada.
Below, *Platycordulia xanthosoma* ♂. Wister, Oklahoma. From type.

defined Macromiinae (= Synthemiinae*) but only the faunal genera, two in number, are considered and the contents of the sub-family are not indicated. The genera segregated by his first character, *the triangle of the hind wing placed considerably beyond the arculus,* are not identical with the genera segregated by his second character, *the anal loop well developed and hardly longer than broad.* The third character, *with more than 2 cubito-anal cross-veins,* like the characters on which the two groups of de Selys were founded, is not a character upon which major groups can be based. In *A Genealogic Study of Dragonfly Wing Venation,* 1903, Needham indicates *Synthemis* as belonging to the Macromiinae.

Omitting for the present the three Corduline genera with 4-sided triangles in the front wings, on venational characters five groups of Cordulinae of approximately co-ordinate rank, I believe, may be defined. The contents of these groups are as follows†:

I. *Hemicordulia, Procordulia, Somatochlora, Paracordulia, Dorocordulia, Cordulia, Helocordulia, Tetragoneuria, Epicordulia* and *Epitheca;* represented in the Oriental, Australian, Ethiopian, Palaearctic, Nearctic and Neotropical regions.

II. *Neurocordulia, Aeschnosoma* and *Libellulosoma;* represented in the Nearctic, Neotropical and Ethiopian regions.

III. *Oxygastra, Syncordulia, Neocordulia* and probably *Gomphomacromia;* represented in the Australian, Palaearctic and Neotropical regions.

IV. *Nesocordulia, Idomacromia, Idionyx* and probably *Macromidia;* represented in the Ethiopian and Oriental regions.

V. *Epophthalmia, Macromia, Azuma, Didymops, Phyllomacromia* and *Synthemis;* represented in the Oriental, Australian, Ethiopian, Palaearctic and Nearctic regions.

Some of the characters upon which this grouping is based are as follows:

1. M_4 and Cu_1 in front wing convergent. Group I.
   M_4 and Cu_1 in front wing parallel. Group III excepting *Gomphomacromia.*
   M_4 and Cu_1 in front wing slightly divergent. Groups II and IV and *Gomphomacromia.*

* See Proc. U. S. Nat. Mus., vol. xxvii, page 698, foot-note *a.*

† No attempt at an orderly arrangement of the genera within each group has been made.

M_4 and Cu_1 in front wing widely divergent, Cu_1 strongly curved. Group V.

2. M_3 and M_4 in front wing distinctly divergent. Group III.
   M_3 and M_4 in front wing convergent or only slightly divergent. Groups I, II, IV and V.
3. Anal loop long, apex widened. Groups I and II.
   Anal loop long, apex rounded, not widened. Groups III and IV (obscured in *Gomphomacromia* and *Macromidia*).
   Anal loop rounded. Group V.
4. Proximal angle of the subtriangle in front wing proximal to, on level of, or only slightly beyond arculus. Groups I, II and III.
   Proximal angle of the subtriangle in front wing distal to the level of the arculus by at least the length of the anterior side of the subtriangle. Groups IV and V. (In Group IV the postanal cell* forms more of the posterior side of the subtriangle than the cell just proximal to the postanal cell: in Group V, excepting in *Phyllomacromia* where they are about equal, the postanal cell is much the shorter).
5. In front wing the postanal cell* divided (2-celled). Groups I and II.
   In front wing the postanal cell* undivided. Groups III, IV and V.
6. Proximal side of triangle in hind wing on level of or proximal to arculus. Groups I and II.
   Proximal side of triangle in hind wing distal to arculus by less than length of arculus. Group III.
   Proximal side of triangle in hind wing distal to arculus by at least the length of arculus. Groups IV and V.

The consideration of these characters and the resulting groupings makes it impossible to reduce the sub-family to a smaller number of co-ordinate sub-groups than five. The stalking or distinct origin of M_{1-3} and M_4 at the arculus has not been used because of its indefinite character in many cases. The origin is generally distinct in Group I and in *Neurocordulia* and *Oxygastra* and stalked in all others reaching the extreme development in *Phyllomacromia, Didymops* and *Idionyx*. Other characters not here mentioned are available for defining groups or genera. For example, Group III has 3-5 cross-veins between M_{1-3} and M_4 in front wing and 2 in

* Postanal cell—a small distinct area in the front wing posterior to the subtriangle, homologous with the anal loop of the hind wing in the Cordulinae.

hind wing; Group IV has 8-12 cross-veins in front wing and 4-5 in hind wing.

Of the three genera with 4-sided triangles in the front wing, *Cordulephya* is remarkable by the great divergence of M_3 and M_4, and the convergence of M_1 and Cu_1 in the front wing, and the reduction of wing area. It suggests *Syncordulia*. *Neophya* is its exact opposite in all these characters and suggests *Idionyx*. *Pentathemis* has as little in common with the other two as they have with each other, the 4-sided triangle of the front wing resulting from an entirely different switching of veins. It is related to *Aeschnosoma* and perhaps should be placed in the same group.

PLATYCORDULIA new genus.*

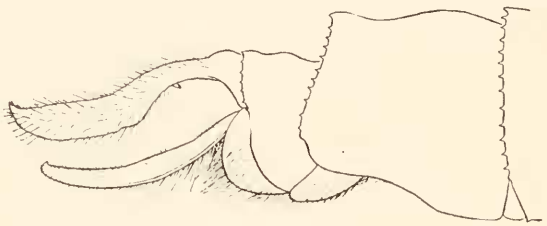
Related to *Neurocordulia, Aeschnosoma and Libellulosoma.* Distinguished at once from all by the apically broadened and rounded anal loop which is widely separated from the wing margin by 2 rows of cells (one row in all the others). Of the four genera it has the densest reticulation. The two genera *Aeschnosoma* and *Libellulosoma* are closely related to each other and are distinguished from the other two, among other characters, by the strongly waved M_3 and M_4 in both front and hind wings and the unsymmetrical and peculiar forking of M_1 and M_2 in both front and hind wings. Two species of *Neurocordulia* are known. The venational difference between them is slight, consisting of a greater number of antenodals in both front and hind wings in *yamaskanensis* as compared with *obsolcta* and scarcely definable differences in the form of the anal loop (differences in the form of the two distal angles and the direction of the distal side with reference to the long axis of the wing). Some of the venational differences between the two species of *Neurocordulia* and *Platycordulia xanthosoma* n. sp. are discussed below. The denser reticulation of *Platycordulia* is a striking character, recognized at once by the increased number of rows of cells between the sectors at a relatively proximal position in the wing. Type of *Platycordulia*: *P. xanthosoma*, n. sp.

* The name refers to the broadened anal loop in the hind wing.

Platycordulia xanthosoma n. sp.

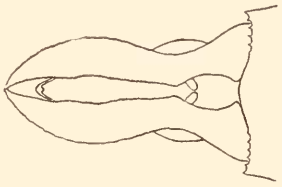
Length of abdomen, including appendages, 38 mm.; hind wing, 36 mm.; hind femur, 9 mm.

Entire insect yellow or yellowish. Abdomen, excepting segment 1, basal half of 2 and all of 10, darker than thorax; 5-8 or 9 each with a

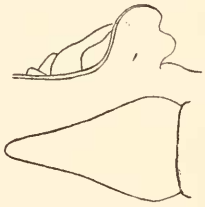


Platycordulia xanthosoma ♂—Profile view of segments 9 and 10.

lateral basal paler spot. Head rounded, eyes contiguous for a distance about equal to the width of the vesicle. Wing membrane pale yellowish with clear yellow markings as shown in the figure of the wings (the photographic process produced in the figure a greater contrast



Dorsal view of appendages.



Profile view of accesory genitalia of abdominal segment 2, above. Ventral view of inferior appendage, below.

in the color of the membrane in general and the yellow markings than appears to the eye.) Membranule white, posterior third dark brown, this brown color in the hind wing extending across the anal triangle and broadly margining cross-veins in the immediate wing area, not extending into the anal loop.

Some venational characters may be briefly compared with the two species of *Neurocordulia.* Certain characters of 10 males and 7 females of *N. yamaskanensis* were kindly furnished me by Prof. E. M. Walker. The supertriangle of front wing is free in 20 wings ♂ and 12 wings ♀ *yamaskanensis,* and 1 wing ♂ and 4 wings ♀ *N. obsoleta;* crossed in 2 wings ♂ and 4 wings ♀ *yamaskanensis,* 1 wing ♂ and 1 wing ♀ *obsoleta* and 4 wings ♂ of *P. xanthosoma.* Supertriangle of hind wing free in 22 wings ♂ and 16 wings ♀ *yamaskanensis,* 2 wings ♂ and